Advantages of DOWSIL™ 3 Additive:

- Prevents flooding and floating for improved color consistency
- Can be used in a wide range of pastel and gray solvent based resin systems
- Highly effective at low concentrations for good cost-in-use versus the competition
- Multi functional additive that also improves leveling for simplified formulation
- Can be added in pigment grind or during let-down for formulating flexibility
- Low viscosity for easy incorporation
- Low VOC content at the recommended use levels (typically <0.01 g/l)

Table 1: Properties of DOWSIL™ 3 Additive

<table>
<thead>
<tr>
<th>Property</th>
<th>DOWSIL™ 3 Additive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Silanol functional silicone resin in solvent</td>
</tr>
<tr>
<td>Non-volatile content, %</td>
<td>10</td>
</tr>
<tr>
<td>Solvent</td>
<td>Toluene</td>
</tr>
<tr>
<td>Specific Gravity at 25°C (77°F)</td>
<td>0.9</td>
</tr>
<tr>
<td>Flash Point (closed cup), °C (°F)</td>
<td>4 (39)</td>
</tr>
<tr>
<td>Viscosity at 25°C (77°F)</td>
<td>0.7–1.4</td>
</tr>
</tbody>
</table>
**Improved Flooding and Floating Prevention**

DOWSIL™ 3 Additive is most effectively used in the grind phase when dispersing TiO₂ in white base paints. When this white base paint is used to prepare pastels and grays, DOWSIL™ 3 Additive prevents flooding and floating.

It also can be used as a co-dispersant along with other wetting and dispersing additives during the “co-grind” of titanium dioxide.

A silanol functional silicone resin, DOWSIL™ 3 Additive offers an alternative chemistry to market for dispersant technology and has been shown to be highly effective versus existing market solutions.

Figure 1 demonstrates the effectiveness of DOWSIL™ 3 Additive in a gray 2K solventborne polyurethane wood coating versus two competitive dispersant technologies. When added at the same weight percent into the total formulation (during the grind phase), DOWSIL™ 3 Additive outperforms the competition in preventing floating (measured by in-can observation) and flooding (lower DE value after rub-out).

**High Efficiency and Low Cost-in-Use in Grinding**

In Figure 1, we saw the performance of DOWSIL™ 3 Additive and competitor solutions at 2 percent by weight of TiO₂ (or 0.22 percent by weight in the total formulation). The unique chemistry and high efficiency of DOWSIL™ 3 Additive mean it can be used at even lower addition levels and still perform well. When the addition level of DOWSIL™ 3 Additive is reduced to less than half its original dosage (0.8 percent by weight of TiO₂) in the same formulation, its effectiveness at preventing floating is still superior to competitive solutions (Figure 2).

The recommended dosage of DOWSIL™ 3 Additive is 2-10 weight percent of the titanium dioxide used when dispersing TiO₂ in white base paints (or 0.2-1 weight percent of a total formulation containing 10 percent TiO₂). Concentrations ranging from .05-0.5 weight percent based on the total formulation are effective when DOWSIL™ 3 Additive is used in the “co-grind” of titanium dioxide.

It is important to note that the amount required is formulation dependent. Characteristics may vary when used with different systems and formulations. Thorough preproduction testing is necessary to ensure expected performance.

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**Figure 1:** Floating (in-can observation) and flooding (rub-out results) with DOWSIL™ 3 Additive versus competitor dispersants in a solvent based 2K PU gray wood coating. All additives added during grinding of base white coating.

**Figure 2:** Floating (in-can observation) and flooding (rub-out results) in a solvent based 2K PU gray wood coating. DOWSIL™ 3 Additive is compared to competitor dispersants at lower addition levels in grind.
**Effective in Post-Addition**

Although most effective in the grind stage, DOWSIL™ 3 Additive also can be post-added at levels as low as 0.03 percent by weight in the total formulation to improve flooding and floating beyond traditional dispersants on the market today.

Where DOWSIL™ 3 Additive cannot be used in the grind phase, post-addition is possible to improve flooding and floating. Figure 3 demonstrates how adding DOWSIL™ 3 Additive at levels as low as 0.03 percent by weight in the total formulation can be effective.

**Performance Summary**

With its unique silanol functional silicone resin chemistry, DOWSIL™ 3 Additive effectively improves the stability and color consistency of solventborne paints, coatings and inks. DOWSIL™ 3 Additive gives excellent anti-flooding and anti-floating performance and good cost-in-use performance compared to competitor additives due to its high efficiency at very low addition levels. The ability to use DOWSIL™ 3 Additive in the pigment grind or in a post-addition step in a wide variety of solvent based resin systems also provides formulation flexibility.

**Table 2:** Differentiated performance of DOWSIL™ 3 Additive for prevention of flooding and floating.

<table>
<thead>
<tr>
<th>Property</th>
<th>DOWSIL™ 3 Additive</th>
<th>Competitor 1</th>
<th>Competitor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-Floating</td>
<td>⚫⚫⚫⚫</td>
<td>⚫</td>
<td>⚫⚫</td>
</tr>
<tr>
<td>Anti-Flooding</td>
<td>⚫⚫⚫⚫</td>
<td>⚫</td>
<td>⚫⚫</td>
</tr>
<tr>
<td>Efficiency</td>
<td>⚫⚫⚫⚫</td>
<td>⚫</td>
<td>⚫⚫</td>
</tr>
<tr>
<td>Cost in Use</td>
<td>⚫⚫⚫⚫</td>
<td>⚫</td>
<td>⚫</td>
</tr>
<tr>
<td>Formulation Flexibility</td>
<td>⚫⚫⚫⚫</td>
<td>⚫</td>
<td>⚫⚫</td>
</tr>
</tbody>
</table>
More Than Additives

Our innovative, silicon-based enabling technologies can help you infuse your products with high-value performance attributes that can give you a competitive advantage in the marketplace. As a leader and innovator with a long history of success in the industry, Dow’s performance-enhancing coating technology platforms are well-aligned to the needs of the increasingly competitive global coatings market. Consider what adding the following enabling technologies could do to improve your products’ performance and support your business goals:

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